WHAT IS CLAIMED IS:

1. A digital film grain for detection of x-rays which comprises:

a photodetector which produces an electrical signal having a strength which is related to an input x-ray flux; and

a transponder which receives said electrical signal and transmits information quantifying said electrical signal.

2. A digital film grain as in claim 1 wherein said photodetector is a light sensitive element.

3. A digital film grain as in claim 1 wherein said photodetector is a radiation detection element.

4. A digital film grain as in claim 1 wherein said photodetector is direct radiation detector.

5. A digital film grain as in claim 4 wherein a layer selected from a group comprised of cadmium telluride, cadmium zinc telluride, lead iodide, mercuric iodide, and amorphous selenium is said direct radiation detector.

6. A digital film grain as in claim 1 wherein said photodetector is an indirect radiation detector.

7. A digital film grain as in claim 1 wherein a luminophor is in proximity to said photodetector.

8. A digital film grain as in claim 1 wherein said transponder comprises a radio frequency generator.

9. A digital film grain as in claim 1 wherein said transponder comprises an antenna.

10. A digital film grain as in claim 1 wherein said transponder comprises a modulator.

11. A digital film grain as in claim 1 wherein said transponder extracts electrical energy from a radiated field to provide electrical power for said digital film grain.

12. A digital film grain as in claim 1 wherein electrical power for said photodetector and said transponder is stored in a capacitor.

13. A digital film grain as in claim 12 wherein said capacitor is located on said digital film grain.

14. A digital film grain as in claim 1 wherein a layer of x-ray converting material is in optical contact with a photodetective surface of said digital film grain.

15. A digital film grain as in claim 14 wherein said digital film grain is disposed in a container.

16. A digital film grain as in claim 15 wherein said container is a capillary.

17. A digital film grain as in claim 1 wherein said digital film grain is disposed in a container and said container contains a material producing a light emission in response to an input radiation flux.

18. A digital film grain as in claim 1 wherein said digital film grain has an individual identifier.

19. A digital film grain as in claim 1 wherein said photodetector is selected from a group comprised of photodiode, charged coupled device (CCD), complementary metal oxide semiconductor (CMOS), phototransistor, and avalanche photodiode.

20. A distribution of two or more digital film grains, each of which comprises:

a photodetector which produces electrical signal having a strength which is related to an input light flux; and

a transponder which receives said electrical signal and transmits information quantifying said electrical signal.

21. An imaging system comprising:

a distribution of two or more digital film grains;

a base station containing a transponder capable of sending information to and receiving information from to said digital film grains; and

an image accumulator which assembles signals related to an light flux received at said digital film grains and arranging said signals in an order dependent upon a location of each of said digital grains.

22. A storage and communication device for a digital film grain location map comprising:

a radio frequency identification (RFID) tag comprising a list of film grain identification numbers each of which is paired with a location of each of said digital film grains.

23. A storage and communication device as in claim 22 wherein said RFID tag is attached a matrix comprised of said digital film grains.

24. A digital x-ray film grain comprising:

a charge detector which produces an electrical signal having a strength which is related to an input charge flux;

a transponder which receives said electrical signal and transmits information quantifying said electrical signal; and

a coating applied to said digital film grain for converting x-ray flux to a charge flux.

25. A method of acquiring an image by:

detecting an irradiance profile with a distribution of digital film grains;

sending a signal and an identification number from each of said digital film grains to an image accumulator;

determining a location of each of said digital film grains in said distribution;

assembling said signals from said digital film grains in an order according to said location of each of said digital film grain.

26. A method for determining locations of digital film grains in a distribution by:

directing a spot of irradiation to which said distribution is sensitive toward said distribution, wherein at least one dimension of said spot of irradiation is smaller than a smallest distance between said digital film grains;

recording said location of each of said spots of irradiation;

recording signals from said digital film grains in said distribution; and

correlating said location of said spot of irradiation to each of said digital film grains sending a signal exceeding a predetermined threshold.

27. A method as in claim 26 comprising:

moving said spot of irradiation to another location and correlating digital film grain signals with location until a set of locations for a substantial fraction of the film grains in said distribution have sent a signal indicating detection of irradiation.

28. A micro-array which comprises:

a plurality of photodetectors, each of which produces an electrical signal having a strength which is related to an input photon flux; and

a transponder which receives said electrical signals and transmits information quantifying said electrical signals.

29. A micro-array grain which comprises:

a plurality of photodetectors each of which produces an electrical signal having a strength which is related to an input photon flux; and

a plurality of transponders, each of which receives said electrical signals from at least some of said photodetectors and transmits information quantifying said electrical signal.

30. A digital film grain for detection of ionizing radiation which comprises:

a photodetector which produces an electrical signal having a strength which is related to an input radiation flux; and

a transponder which receives said electrical signal and transmits information quantifying said electrical signal.

31. A digital film grain which comprises:

a photodetector which produces an electrical signal having a strength which is related to an input light flux; and

a transponder which receives said electrical signal and transmits information quantifying said electrical signal.

32. A digital film grain as in claim 31 wherein said photodetector is selected from a group comprised of photodiode, charged coupled device (CCD), complementary metal oxide semiconductor (CMOS), phototransistor, and avalanche photodiode.

33. A digital film grain for detection of visible light, ultraviolet, or infrared radiation which comprises:

a photodetector which produces an electrical signal having a strength which is related to an input radiation;

a transponder which receives said electrical signal and transmits information quantifying said electrical signal; and

wherein components of said digital film grain are fabricated on a single substrate.

34. A digital film grain as in claim 33 wherein spatial dimensions in said substrate are approximately equal with a pixel size of an image produced by an array of said digital film grains.

35. A digital film grain of claim 33 wherein said substrate spatial dimension is 200 μm or smaller.